Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for stabilizing the temperature of at least one optically active component, comprising the steps of:

- impinging an optically active component with an interacting energy comprising a drive energy and light beam;
- determining the temperature of said optically active component by means of a temperature control loop comprising a temperature sensor;
- determining said ~~an~~ interacting energy impinging said optically active component based on said temperature; ~~with the optically active component wherein the interacting energy is a drive energy of the optically active component and the a light beam that interacts with the optically active component; wherein the interacting energy is determined by a temperature control loop;~~
- ~~switching the drive energy, according to the determination of the temperature control loop, to a different energy interacting with the optically active component; and,~~
- ~~maintaining the temperature of the optically active component at a constant level by switching the interacting energy.~~
- applying a different interacting energy impinging to said optically active component, according to said temperature control loop, such that the temperature of said optically active component is maintained at a constant level.

2. (canceled)

3. (canceled)

4. (canceled)

5. (previously presented) The method as defined in Claim 1, characterized in that the measurement of the temperature of the optically active component is accomplished by way of the optical properties of said optically active component, said properties of said optically active component calibrated prior to temperature measurement.

6. (canceled)

7. (canceled)

8. (currently amended) An apparatus for stabilizing the temperature of an optically active component comprises:

- a temperature control loop;
- a temperature sensor secured to said optically active component for measuring the temperature of said optically active component;
- means for determining an interacting energy interacting with the optically active component, wherein the interacting energy is a drive energy of the optically active component and a ~~the~~ light beam that interacts with the optically active component; and, ~~wherein the means for determining is a temperature control loop;~~
- means for applying a different interacting energy to said optically active component, according to said temperature control loop, such that the temperature of said optically active component is maintained at a constant level.
- ~~means for switching the drive energy interacting with the optically active component, wherein the means for switching is performed by a drive unit; and,~~

- ~~means for maintaining the temperature of the optically active component at a constant level by switching the interacting energy, wherein the means for maintaining the interacting energy at a constant level is the temperature control loop.~~

9. (canceled)

10. (canceled)

11. (previously presented) The apparatus as defined in Claim 8, characterized in that the optically active component comprises a dichroic beam splitter, an acoustooptical tunable filter (AOTF) and acoustooptical beam splitter (AOBS), an acoustooptical modulator (AOM), an acoustooptical deflector (AOD) or an electrooptical modulator (EOM).

12. (previously presented) The apparatus as defined in Claim 11, characterized in that the optically active component provides one wavelength of a light beam for further use.

13. (previously presented) The apparatus as defined in Claim 11, characterized in that the optically active component modifies the intensity of a light beam.

14. (previously presented) The apparatus as defined in Claim 8, characterized in that a beam interruption system is arranged after the optically active component.

15. (currently amended) A scanning microscope, comprising:

- a light source defining a light beam,
- a dichroic beam splitter for directing the light beam to a scanning device and via a optical system to a specimen,
- an optically active component being arranged in the path of the light beam,
- a temperature control loop,

- a temperature sensor secured to said optically active component for measuring the temperature of the optically active component; wherein the temperature control loop and temperature sensor determine the temperature and an interacting energy for the optically active component; and, ~~for determining a temperature and an energy interacting with the optically active component;~~
- means for applying a different interacting energy, according to the determination of the temperature control loop, to the optically active component such that the temperature of the optically active component is maintained at a constant level.
- ~~means for switching to a different energy interacting with the optically active component; and,~~
- ~~means for maintaining the temperature of the optically active component at a constant level by switching the interacting energy, wherein the interacting energy is a drive energy of the optically active component and the light beam that interacts with the optically active component.~~

16. (previously presented) The scanning microscope as defined in Claim 15, characterized in that the optically active component consists essentially of an acoustooptical tunable filter (AOTF), an acoustooptical beam splitter (AOBS), an acoustooptical modulator (AOM), an acoustooptical deflector (AOD), or an electrooptical modulator (EOM).

17. (previously presented) The scanning microscope as defined in Claim 16, characterized in that the optically active component provides one wavelength to be coupled into or out of the scanning microscope.

18. (previously presented) The scanning microscope as defined in Claim 16, characterized in that the optically active component modifies the intensity of the light beam to be coupled into or out of the scanning microscope.

19. (previously presented) The scanning microscope as defined in Claim 16, characterized in that the optically active component deflects at least one light beam.

20. (previously presented) The scanning microscope as defined in Claim 16, characterized in that the optically active component is adjustable so that influencing of the light beam is thereby effective selectively on light of at least one wavelength and/or on light in at least one polarization state.

21. (previously presented) The scanning microscope as defined in Claim 16, characterized in that influencing of the light beam is synchronized with a measurement operation and/or illumination operation of the scanning microscope.

22. (previously presented) The scanning microscope as defined in Claim 21, characterized in that the optically active component is impinged upon by the interaction energy even when no measurement operation and/or illumination operation is being accomplished with the scanning microscope.

23. (previously presented) The apparatus as defined in Claim 22, characterized in that in order to couple in a specific wavelength of the light beam, an acoustooptical beam splitter (AOBS) or acoustooptical tunable filter (AOTF) is impinged upon by a frequency of the drive energy that corresponds to the wavelength that is to be coupled in.

24. (previously presented) The apparatus as defined in Claim 22, characterized in that if no light is being coupled in, an acoustooptical beam splitter (AOBS) or acoustooptical tunable filter (AOTF) is nevertheless impinged upon by a frequency of the drive energy that does not correspond to any of the available light wavelengths.

25. (previously presented) The apparatus as defined in Claim 22, characterized in that the acoustooptical beam splitter (AOBS) or acoustooptical tunable filter (AOTF) is impinged upon by a frequency of the drive energy that corresponds to none of the light wavelengths being used for scanning with the scanning microscope.

26. (previously presented) The apparatus as defined in Claim 22, characterized in that the light that is not coupled into the scanning microscope is absorbed with the aid of a beam trap.

27. (previously presented) The apparatus as defined in Claim 15, characterized in that a beam interruption system is arranged after the optically active element.

28. (previously presented) The apparatus as defined in Claim 27, characterized in that said beam interruption system comprises a shutter.

29. (previously presented) The apparatus as defined in Claim 15 characterized in that said control loop comprises a temperature sensor secured to said optically active component.

30. (previously presented) The apparatus as defined in Claim 14 wherein said beam interruption system comprises a shutter.

31. (currently amended) The method as defined in Claim 1, characterized by switching the drive energy to a non-deflecting energy interacting with the optically active component during a measurement pause of the light beam used therefore.